

What is claimed is:

1 1. A method for processing communication at a node in a communication
2 system comprising:
3 receiving at said node a series of fixed-length data frames over the
4 communication system, including receiving a plurality of data streams multiplexed in the
5 series of fixed-length frames, each of the data streams originating from a corresponding
6 one of a plurality of sources of data in the communication system and at least two of said
7 data streams originate from a same source of data;
8 for each of the series of fixed-length frames, identifying a plurality of offsets
9 within said fixed-length frame, each of said offsets being associated with a different one
10 of the plurality of sources of data; and
11 processing the data streams multiplexed in the series of fixed-length frames,
12 including, for each of the data streams, in each of the series of fixed-length frames,
13 processing said data stream according to the offset identified for said frame that is
14 associated with the source of said data stream.

1 2. The method of claim 1 wherein identifying the offsets within a fixed-
2 length frame includes accessing overhead data encoded in said frame to identify offsets
3 that each characterizes a displacement relative to the start of the frame that is associated
4 with a different one of the sources of data.

1 3. The method of claim 2 wherein processing the data streams further
2 includes extracting the one or more of the data streams from the series of fixed-length
3 frames for transmission from the communication network.

1 4. The method of claim 2 further comprising receiving a plurality of data
2 streams, and multiplexing said data streams into a second series of fixed-length data
3 frames for transmission over the communication network, wherein multiplexing said data
4 streams includes computing an offset for each of the second series of fixed-length data
5 frames and storing data for each of the received data streams according to the computed
6 offset.

1 5. The method of claim 1 wherein the communication system comprises a
2 SONET network and receiving each of the series of fixed-length data frames includes
3 receiving a SONET synchronous payload envelope (SPE) transported in the series of
4 SONET transport frames.

1 6. The method of claim 2 wherein receiving a SONET SPE includes
2 receiving a concatenated payload envelope.

1 7. The method of claim 2 wherein identifying the plurality of offsets for each
2 fixed-length data frame includes using data encoded in an SPE to identify offsets which
3 each characterizes a displacement relative to the start of the SPE that is associated with a
4 different one of the sources of data, each source of data corresponding to a different node
5 in the communication network.

1 8. The method of claim 7 wherein identifying an offset which characterizes a
2 displacement relative to the start of the SPE includes identifying SONET row offsets
3 within the SPE.

1 9. The method of claim 8 wherein processing the data streams includes
2 identifying a range of SONET columns associated with each one or more of the data
3 streams and identifying row offsets for each of said data streams according to the row
4 offsets within the SPEs associated with the source of said data stream.

1 10. The method of claim 9 wherein processing the data streams further
2 includes extracting the one or more data streams from the series SPEs for transmission
3 from the SONET network.

1 11. The method of claim 9 wherein processing the data streams further
2 includes multiplexing said data streams in a second series of SPEs for transmission in a
3 second series of transport frames, and transmitting the second series of fixed-length
4 frames over the communication system, wherein multiplexing the data streams includes
5 storing a plurality of row offsets in each of the second series of SPEs, in each SPE each
6 row offset corresponding to a different source node in the SONET network, and
7 multiplexing the data streams further includes storing data for each data stream in the
8 second series of SPEs to maintain a same relationship to the row offset correspond to the
9 source node as that data had to the row offset corresponding to the source node in the
10 series of SPEs received over the communication network.

1 12. The method of claim 11 further comprising identifying a column offset
2 associated with each source of data, and wherein multiplexing the data streams in the
3 second series of SPEs includes determining columns in the second series of SPEs to
4 multiplex each data stream according to the columns used by those data streams in the
5 received series of SPEs and the column offsets.

1 13. The method of claim 8 further comprising receiving a plurality of data
2 streams, and multiplexing said data streams into a second series of SPEs for transport
3 over the SONET network, wherein multiplexing said data streams includes computing a
4 row offset for each of the second series of SPEs and storing data for each of the received
5 data streams according to the computed row offset.

1 14. A propagated signal embodied in a communication medium comprising a
2 series of fixed-length data frames each of said fixed length frames including a plurality of
3 offset values, each offset value being associated with a different one of a plurality of
4 sources of data, and data for a plurality of data streams originating at the sources of data,
5 wherein each offset value identifies offsets within the fixed-length frame for data streams
6 originating at the source of data associated with said offset value.

1 15. A communication device comprising:
2 means for receiving at said node a series of fixed-length data frames over the
3 communication system, including receiving a plurality of data streams multiplexed in the
4 series of fixed-length frames, each of the data streams originating from a corresponding
5 one of a plurality of sources of data in the communication system and at least two of said
6 data streams corresponding to a same source of data;
7 for each of the series of fixed-length frames, means for identifying a plurality of
8 offsets within said fixed-length frame, each of said offsets being associated with a
9 different one of the plurality of sources of data; and
10 means for processing the data streams multiplexed in the series of fixed-length
11 frames, including, for each of the data streams, in each of the series of fixed-length
12 frames, processing said data stream according to the offset identified for said frame that
13 is associated with the source of data corresponding to said data stream

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